

**SYSTEM AND METHOD OF GENERATING A FINITE ELEMENT MESH
FOR A THREADED FASTENER AND JOINING STRUCTURE
ASSEMBLY**

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ABSTRACT OF THE DISCLOSURE

A system and method of generating a finite element mesh for a threaded fastener and joining structure assembly includes a computer system for
10 generating a mesh model of the threaded fastener and joining structure assembly by creating nodes and elements for each non-threaded portion of the threaded fastener and joining structure assembly using cylindrical coordinates and creating nodes and
15 elements for each threaded portion of the threaded fastener and joining structure assembly using helical coordinates. The system and method also includes a user evaluating the mesh model of the threaded fastener and joining structure assembly using finite
20 element analysis and evaluating a result of the finite element analysis using a visualization software program and a computer system. The system and method further includes a user predicting a stress of the threaded fastener and joining structure
25 assembly from the evaluation of the result of the finite element analysis.

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